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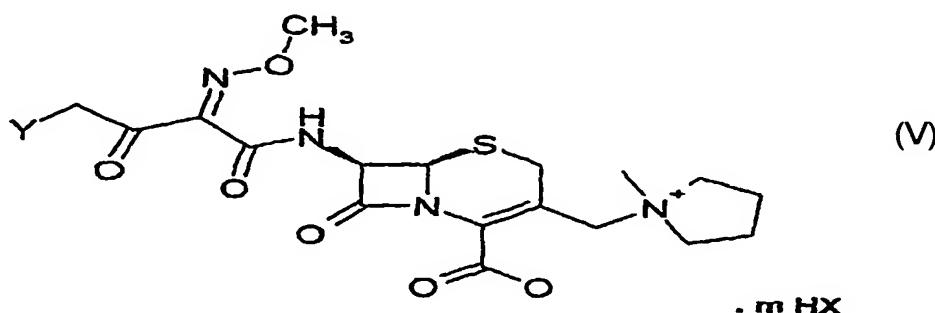
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESSES FOR THE PREPARATIONS OF CEFEPIME



(57) Abstract: This invention provides processes for preparing cefepime, including crystalline intermediates of Formula (V).

# INTERNATIONAL SEARCH REPORT

Inte  
al Application No  
PCT/EP2004/003988

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C07D501/06 C07D501/44

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BEILSTEIN Data, CHEM ABS Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 531 981 A (SQUIBB BRISTOL MYERS CO) 17 March 1993 (1993-03-17) example 31 -----	1-9
X	US 6 384 215 B1 (DESHPANDE PANDURANG BALWANT ET AL) 7 May 2002 (2002-05-07) column 2, lines 19-24 columns 4-5 -----	1-9
X	US 2002/156272 A1 (TOTSCHNIG KLAUS ET AL) 24 October 2002 (2002-10-24) inv. 2 page 1, paragraph 5 - paragraph 12 paragraph '0019! paragraph '0019! page 5, paragraph 46-51 -----	1-4, 8, 9
Y	----- -/-	10-13



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
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- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

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## INTERNATIONAL SEARCH REPORT

In  National Application No  
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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 137 440 A (HOECHST AG) 17 April 1985 (1985-04-17) pages 6-8; claim 1; examples 2-4, 10-12, 20, 21, 25, 27, 44, 46, 50, 53 -----	10-13
X	DATABASE CASREACT XP002297198 Database accession no. 140:111151	14-18
Y	RX(1) & GONG, PING; ZHAO, YANFANG; FENG, RUNLIANG; ZHANG, ZHANTAO: HONGGUO YAOWU HUAXUE ZAZHI, vol. 12, no. 6, 2002, pages 350-351, 362, -----	14-18
Y	US 5 574 154 A (ABU-NASRIEH OMAR) 12 November 1996 (1996-11-12) column 3, lines 36-40; figure 1 -----	14-18
X	WALKER D G: "NEW CEPHALOSPORIN ACYLATING AGENTS DERIVED FROM SYN-2-(2-AMINOTHIAZOL-4-YL)-2-METHOXYIMINO ACETIC ACID. APPLICATION TO THE SYNTHESIS OF CEFEPIME SULFATE" TETRAHEDRON LETTERS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 31, no. 45, 1990, pages 6481-6484, XP002035970 ISSN: 0040-4039 page 6483 -----	14-18
A	US 4 489 072 A (IMAIZUMI HIROYUKI ET AL) 18 December 1984 (1984-12-18) columns 15-16 -----	1-9

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2004/003988

### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4(part),5-9

Process for the preparation of Cefepime Dihydrochloride Monohydrate starting from compound IIA and the intermediates according to claims 5-9.

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2. claims: 1-4(part)

Process for the preparation of Cefepime Dihydrochloride Monohydrate starting from compound IIB.

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3. claims: 10-13

Process for the preparation of Cefepime Dihydrochloride Monohydrate via intermediate VIII.

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4. claims: 14-18

Process for the preparation of Cefepime Dihydrochloride Monohydrate applying the reagent XII.

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Int'l Application No  
PCT/EP2004/003988

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